CONNECTICUT RIVER BASIN
GLASTONBURY, CONNECTICUT

ADDISON POND DAM
CT 00245

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS. 02154

APRIL 1981

UNCLASSIFIED

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Addison Pond Dam is a stone masonry structure, 88 ft. long with short, low earth embankments extending 70 ft. east and 30 ft. west. The masonry dam has a top width of 2 ft. and a maximum height of approx. 18 ft. Based on visual inspection, the Addison Pond Dam is judged to be in poor condition. Several areas require repair work and/or monitoring. The Addison Pond Dam is classified as 'small' in size with a 'low' hazard potential.

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ADDISON POND DAM

CT 00245

CONNECTICUT RIVER BASIN

GLASTONBURY, CONNECTICUT

PHASE I INSPECTION REPORT

NATIONAL DAM INSPECTION PROGRAM

NATIONAL DAM INSPECTION PROGRAM
PHASE I INSPECTION REPORT

IDENTIFICATION NO: CT-00245

NAME OF DAM: Addison Pond Dam

TOWN: Glastonbury

COUNTY AND STATE: Hartford County, Connecticut

STREAM: Salmon Brook

DATE OF INSPECTION: December 17, 1980

BRIEF ASSESSMENT

Addison Pond Dam is a stone masonry structure, 88 ft. long with short, low earth embankments extending 70 ft. east and 30 ft. west. The masonry dam has a top width of 2 ft. and a maximum height of approximately 18 ft. There is a 3½ ft. x 4 ft. regulating outlet through the west side of the spillway. The operating mechanism for the outlet is currently inoperable.

Based on visual inspection, the Addison Pond Dam is judged to be in poor condition. Several areas require repair work and/or monitoring. Some features found existing that could affect the stability of the dam are considerable leakage through the spillway and the eastern portion of the dam structure, state of general disrepair of the entire project and continuous flow of water from the foundation of the warehouse.

It is recommended that the owner arrange for a qualified registered engineer to do the following within one year of the receipt of this report:

Inspect the dam after the pond has been lowered and investigate sources of leakage through the dam, the spillway and at the warehouse foundation.;

Design necessary repairs to the structures including the dam, the spillway, the regulating outlet mechanism.

The recommendations of the professional engineer should be implemented by the owner. Remedial measures contained in Section 7 should be carried out within a period of one year.

Based on the Corps of Engineers' "Recommended Guidelines for Safety Inspection of Dams", the Addison Pond Dam is classified as 'small' in size with 'low' hazard potential. A test flood equal to 100 year event was selected in accordance with the Corps of Engineers' Guidelines. The calculated test flood inflow of 4,500 cfs was used in the analysis to assess spillway capacity. The storage capacity of the pond being small, the routing did not alter the flow significantly.

The spillway capacity is 600 cfs with the water level at the top of the dam. The spillway is capable of passing only 13% of the test flood flow without overtopping the dam. The

storage capacity up to the top of the dam is 62 ac. ft. and up to the test flood level is 115 ac. ft.

An operation and maintenance manual to take care of normal routine procedures should also be prepared.

GOODKIND & O'DEA INC.
AND
SINGHAL ASSOCIATES (J.V.)

Ramesh Singhal, Ph.D., P.E.
(Singhal Associates)

Lawrence J. Buckley, P.E.
(Goodkind & O'Dea, Inc.)

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I investigation: however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the

present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there by any chance that unsafe conditions be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

The Phase I Investigation does <u>not</u> include an assessment of the need for fences, gates, no-trespassing signs, repairs to existing fences and railings and other items which may be needed to minimize trespass and provide greater security for the facility and safety to the pulic. An evaluation of the project for compliance with OSHA rules and regulations is also excluded.

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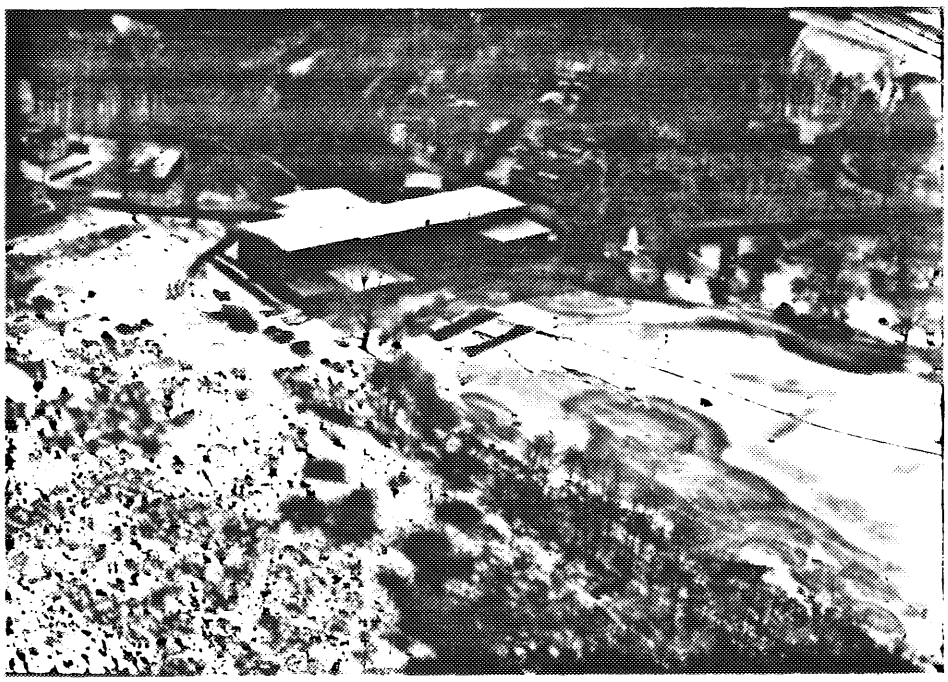


GOODKIND & O'DEA INC.—SINGHAL ASSOCIATES (J.V.) ENGINEERS	U.S. ARMY ENGINEER DIV. NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.

NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS

OVERVIEW PHOTO OF DAM

ADDISON POND DAM

GLASTONBURY, CONNECTICUT

DRAWN BY	CHECKED BY	APPROVED BY	SCALE: NONE	
E.T.K.	W.J.W.	L.J.O.	DATE: APR., 1981	SHEET 1

PROJECT INFORMATION
Section 1

1.1 General

a. Authority

Public Law 92-367, August 8, 1972, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a National Program of Dam Inspection throughout the United States. The New England Division of the Corps of Engineers has been assigned the responsibility of supervising the inspection of dams within the New England Region. Goodkind & O'Dea, Inc., Hamden, Conn. and Singhal Associates, Orange, Conn. (Joint Venture) have been retained by the New England Division to inspect and report on selected dams in the State of Connecticut. Authorization and notice to proceed were issued to Goodkind & O'Dea, Inc. and Singhal Associates (J.V.) under a letter of December 9, 1980 from Colonel William E. Hodgson, Jr., Corps of Engineers. Contract No. DACW 33-81-C-0022 dated December 9, 1980 has been assigned by the Corps of Engineers for this work.

b. Purpose of Inspection

The purposes of the program are to:

1. Perform technical inspection and evaluation of non-federal dams to identify conditions requiring correction in a timely manner by non-federal interest.

2. Encourage and prepare the States to quickly initiate effective dam inspection programs for non-federal dams.

3. To update, verify and complete the National Inventory of Dams.

1.2 Description of Project

a. & b. Location and Description of Dam and Structures

The Addison Pond Dam is situated on the Salmon Brook which flows into the Connecticut River, approximately 3 miles downstream from the dam. The location is approximately 2 miles northeast of the Glastonbury Town Hall and one mile east of the intersection of Route 94 (Hebron Avenue) and Route 2. The geographic location of the site may be found on the Glastonbury Quadrangle Map, having coordinates of latitude N 41° 43.1' and longitude W 72° 34.6'.

The Addison Pond is impounded by Addison Pond Dam which is a stone masonry structure 88 ft. long with two minor earth embankments extending east and west approximately 70 ft. and 30 ft. respectively. The top width of the masonry dam is 2 ft. and maximum height 18 ft. with crest elevation 102.0. The downstream slope is vertical and the upstream slope presumably the same.

The spillway, 50 ft. wide and with a crest elevation of 99.75 is the overflow portion of the dam and has vertical upstream and downstream slopes, same as for the dam. The crest is 2 ft. wide. As shown on the plan, there are stone masonry wing walls

on the downstream side confining the raceway channel which runs under the Porch and Patio building for a distance of 100 ft. starting from about 30 ft. from the dam. In addition to the 50' spillway, there is a 13 ft. wide dam section at elevation 100.25 which also acts as a spillway.

c. Size Classification - 'Small'

d. Hazard Classification - 'Low'

A dam failure analysis indicates that a breach of the Addison Pond Dam would result in an instantaneous downstream flow of approximately 10,000 cfs causing a 9 ft. high wave of water to travel down the Salmon Brook. Continuation of the flood routing through the brook indicates that at the two cross-sections analyzed, the flood-flow depths under the dam failure condition, and the test-flow condition (with no failure), work out as follows:

	Initial Q (cfs)	Flow depth (ft.) Sta. 7+0	Sta. 16+50
Test flood condition (no failure assumed)	4,500	6.0	10.0
Dam failure condition	10,000	9.0	11.0

The brook has steep banks on both sides for a distance of 1,600 ft. downstream from the dam. Around the intersection of Mill Street with Salmon Brook, there are 3 houses whose yards are subject to flooding both under the test flood and the dam failure flood. Water is not expected to rise above the first

floor elevations.

Downstream from Section #2 (sta. 16+50), the routed flows for test flood condition and the dam failure condition are 3,100 cfs and 5,200 cfs, and the wave depths 10 ft. and 11 ft. respectively and closing in with each other. Further downstream there will be no additional flood hazard caused by dam failure.

e. Ownership & History

The owner and operator for the Addison Pond Dam is:

Velvet Textile Corporation
Blackstone, Virginia

The dam is currently used for recreational purposes. It was built in the early 1800's by the Addison Woolen Mill for generating water power. The penstock was located on the east side of the dam embankment and supposedly went out of commission in the 1940's. A 3½ ft. x 4 ft. regulating outlet was built in the 1950's through the face of the spillway.

There are no available design or construction plans or records. The only available information about the project was the aerial topographic map furnished by the Town of Glastonbury.

The owner used to drain the pond periodically for cleaning and necessary repairs. This came to a stop four years back when the regulating outlet control mechanism was vandalized and rendered inoperable. Currently there are no known operational and maintenance procedures.

1.3 Pertinent Data

a. Drainage Area

The drainage area consists of 6.25 sq. miles of flat terrain with average slope approximately 3.25%. Most of the area is lightly populated, with several town roads and State Route 94 (Hebron Avenue) passing through.

b. Discharge at Damsite

There is one 50 ft. long overflow spillway at the damsite at a crest elevation of 99.75, and a 13 ft. long low section of the dam at crest elevation of 100.25 which also acts as a spillway.

1. Outlet works conduit:	N/A
2. Maximum known flood at damsite:	Unknown
3. Ungated spillway capacity at top of dam elevation:	600 cfs 102.0
4. Ungated spillway capacity at test flood elevation 105.5:	4,500 cfs
5. Gated spillway capacity at normal pool elevation 99.75:	N/A
6. Gated spillway capacity at test flood elevation 105.5:	N/A
7. Total spillway capacity at test flood elevation 105.5:	4,500 cfs
8. Total project discharge at top of dam elevation 102.0:	600 cfs
9. Total project discharge at test flood elevation 105.5:	4,500 cfs

c. Elevation (NGVD)

1. Streambed at toe of dam:	84.7
2. Bottom of cutoff:	N/A
3. Maximum tailwater:	N/A
4. Normal pool:	99.8
5. Full flood control pool:	99.75
6. Spillway crest:	99.75
7. Design surcharge (original design):	N/A
8. Top of dam:	102.0
9. Test flood surcharge:	105.5

d. Reservoir Length in Feet

1. Normal pool:	1,400 ft.
2. Flood control pool:	1,400 ft.
3. Spillway crest pool:	1,400 ft.
4. Top of dam:	1,800 ft.
5. Test flood pool:	2,300 ft.

e. Storage (acre feet)

1. Normal pool:	30
2. Flood control pool:	30
3. Spillway crest pool:	30
4. Top of dam:	62
5. Test flood pool:	115

f. Reservoir Surface-Acres

1. Normal pool:	14.5
2. Flood control pool:	14.5

3.	Spillway crest:	14.5
4.	Top of dam:	18.5
5.	Test flood pool:	24.0

g. Dam

1.	Type	Main dam made of stone masonry with several stone masonry walls retaining two minor earth embankments on both sides of main dam.
2.	Length:	88 ft. stone masonry dam with 30 ft. and 70 ft. long embankments located west and east.
3.	Height:	18 ft.
4.	Top width:	2 ft.
5.	Side slopes:	Vertical
6.	Zoning:	N/A
7.	Impervious core:	N/A
8.	Cutoff:	N/A
9.	Grout curtain:	N/A
10.	Other:	-

h. Diversion and Regulating Tunnel: N/A

i. Spillway

1.	Type:	Stone masonry
2.	Length of crest:	50 ft. + 13 ft. = 63 ft.
3.	Crest elevation (NGVD):	99.75 and 100.25
4.	Gates:	N/A
5.	Upstream channel:	N/A

6.	Downstream channel:	Salmon Brook
7.	General	-

J. Regulating Outlet

1.	Invert:	89.5 (NGVD)
2.	Size:	3½ ft. x 4 ft.
3.	Description:	Sluice outlet through the spillway
4.	Control mechanism:	Gate valve with vertical operating handle, currently out of order
5.	Other:	-

ENGINEERING DATA
Section 2

There was no available design, construction, or operational data for Addison Pond Dam. The only available information was the Aerial Topographical Survey Map supplied by the Town of Glastonbury.

VISUAL INSPECTION
Section 3

On December 17, 1980 engineers from Goodkind & O'Dea, Inc. and Singhal Associates formally inspected Addison Pond Dam. Detailed checklists included in Appendix A, aided in the inspection of the dam, spillway and regulating outlet. Also taken during the visual inspection and given in Appendix C, are several photographs revealing these dam features and the problem areas. The pool level of Addison Pond was approximately 99.8 ft. (NGVD) at the time of the inspection, which was one-tenth of a foot above the spillway crest.

As assessed by the visual inspection, the general condition of the dam is poor, with several areas requiring repair work and/or monitoring.

Dam

Addison Pond Dam is primarily a stone masonry structure situated between the building presently known as Porch and Patio Warehouse (See general dam plan in Appendix B). The stone masonry structure consists of a 50' spillway with the dam extending 36 ft. east. In addition to the main structure, there are several stone masonry walls retaining two minor earth embankments located north of the dam (See Photos 1, 2 and 3).

Founded on rock base, the 23' stone masonry east dam embankment was generally in fair condition with an appreciable amount of mortar missing between the stones of the lower two feet.

As shown in Photo 6, minor seepage was observed at these mortarless joints and at the contact zone with the rock base. The upper dam section appeared to be in better condition with the exception of the irregular horizontal alignment as a result of several missing stones (See Photos 5 & 6).

Also shown in Photo 6 is a 4" steel drain pipe and a 15" x 12" opening coming through the face of the dam. The source of these two openings could not be determined, but no evidence of any unusual seepage was noticed.

Immediately east of the 50 ft. spillway is an additional 13 ft. section of the dam with a concrete coping. Since the top of this dam section is only 6" above the spillway crest, it also serves as a spillway under high water conditions. This stone masonry embankment is leaking badly as shown in Photos 4 & 5. Water is continuously leaking between the concrete coping and stone masonry at the 5' section of the embankment adjacent to the spillway.

Appurtenant Structures

The 50 ft. spillway is a stone masonry structure with a 2 ft. wide concrete coping across the crest (See Photos 2, 3 and 4). Observation revealed leakage all along the spillway between the concrete coping and stone masonry. Due to water flowing over the spillway, a thorough inspection of its face could not be completed.

The 15 ft. and 23 ft. long stone masonry structures upstream and perpendicular to the spillway, serve as training walls (See general dam plan in Appendix B). As shown in Photo 3, the

east wall is lacking several stones and its concrete coping, whereas, the west wall is only missing the concrete coping (See Photo 2). Overall, the general condition of the two training walls was good with no evidence of missing mortar or seepage. The approach channel through the training walls and the channel immediately downstream of the spillway was clean with no accumunation of debris (See Photos 3 and 4).

Located upstream and east of the spillway, the 63 ft. long 2 ft. wide stone masonry retaining wall, with a 4" thick concrete coping, was in good condition.

The 3 1/2 ft. by 4 ft. regulating outlet through the face of the spillway was obscured by the flow over the spillway, preventing a close inspection. Situated on a pile supported wooden platform the control works for the regulating outlet were inoperable (See profile of spillway, Sheet B-2), since the mechanism which raised and lowered the gate for the outlet was disconnected. Due to pond water level and the absence of any design or construction data, the details of the regulating outlet could not be determined.

In addition to the regulating outlet, there is a screen covered intake chamber adjacent to the 15' training wall. This structure at one time provided water for several large boilers located in the warehouse. As viewed from the basement, several pipes ranging from 1" to 12" entered the building coming from the direction of the intake chamber. Water was observed to be leaking

from the stone masonry foundation, through the east face of the building into the downstream channel (See Photo 2). The leakage may have been associated with the intake chamber.

Reservoir

Addison Pond is a small body of water located in a mostly undeveloped area with numerous large trees along its shore (See Photo 7).

Downstream Channel

The downstream channel immediately south of the spillway flows under Porch and Patio warehouse, which is supported by timber girders on concrete pedestals. During the inspection of the downstream channel, one pedestal was observed to be displaced and not carrying the girder.

Evaluation

As judged by the visual inspection the overall condition of the dam and appurtenant structures is poor. Water leakage between the stone masonry and the concrete coping of the east dam embankment and 50' spillway and seepage from the face of these structures is a major concern. The seepage accelerates the deterioration of the mortar between the stones and increases the possibility of dam failure. Also, the observed seepage from the warehouse foundation wall west of spillway could eventually lead to deterioration of the structure and possible failure of the dam.

OPERATIONAL AND MAINTENANCE PROCEDURES
Section 4

At this time, there are no operational or maintenance procedures for Addison Pond Dam. The spillway is designed to be uncontrolled and the 3 1/2'x 4' regulating outlet is presently inoperable.

Several years ago, maintenance and repair work of Addison Pond Dam was undertaken periodically by the owner. However, this ended four years ago when the regulating outlet control works were vandalized.

The present operational and maintenance procedures of the dam are poor considering the existing condition of the stone masonry structures and regulating outlet. Formal operational and maintenance procedures with continuing records should be developed by the owner.

EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES
Section 5

The Addison Pond has a contributory drainage area of 6.25 sq. miles which is gently sloping at an average slope of 3.25%. Most of it is lightly populated and has several town roads and State Route 94 (Hebron Ave.) passing through.

The overflow spillway is in two sections: one 50 ft. long at crest elevation 99.75, and another 13 ft. long at 100.25 Total Spillway Capacity is 600 cfs up to the top of the dam, which is only 13% of the test flood discharge of 4,500 cfs. The dam will be overtopped by approximately 3.5 ft. under the test flood condition, assuming no failure. The crest elevation of the dam is 102.0.

No design data is available nor any records of past water elevation in Addison Pond.

Test Flood Analysis

Based on dam failure analysis, the Addison Pond Dam is classified as being 'low' hazard potential in accordance with Table 2 on page D-9 of the Corps of Engineers' Recommended Guidelines for Safety Inspection of Dams. The recommended test flood is 50 to 100 year frequency event. Using the Connecticut Flood Flow Formula, the 100 year flood comes out as:

$$Q = 5 \times 0.85\ AS = 5 \times 0.85 \times 6.25 \times 172 = 4{,}500 \text{ cfs}$$

The test flood was accordingly assumed as 4,500 cfs.

The storage capacity of the pond up to the top of the dam being 62 ac. ft. only, does not result in a substantial decrease due to routing, and the figure of 4,500 cfs was used to calculate the extent of overtopping. The spillway capacity up to the top of the dam is 600 cfs which is only 13% of the test flood flow.

Dam Failure Analysis

A dam failure analysis was made using the guidelines provided by the Corps of Engineers. Failure of the dam was assumed with water level at 102.0, the elevation of the dam crest, and a pre-failure flow of 4,500 cfs. Assuming a dam breach 80 ft. wide and 18 ft. high, the peak release rate into the downstream valley came out as 10,000 cfs.

The height of the flood wave worked out as 9 ft. at the first cross-section (sta. 7+0). At another cross-section further down (sta. 16+50), the flood wave depth came out as 11 ft. approximately. Flood routing computations were done taking into consideration the available valley storage. The resulting flood elevations and the values of routed flood flow are shown in Appendix D, which also gives the routed flows and flood elevations for the test flood, assuming no failure. The two sets of flood depths are tabulated below:

	Initial Q (cfs)	Flow depth ft. Sta. 7+0	Sta. 16+50
Test flood condition (no dam failure)	4,500	6.0	10.0
Dam failure condition	10,000	9.0	11.0

The Salmon Brook has steep banks on both sides for a distance of 1,600 ft. downstream from the dam. Around the crossing of Mill Street with Salmon Brook there are three houses whose yards are subject to flooding both under the test flood and the dam failure flood. Water is not expected to rise above the first floor elevation.

Downstream from Section #2 (sta. 16+50), the routed flows for test flood condition and the dam failure condition are 3,100 cfs and 5,200 cfs and the wave depths 10 ft. and 11 ft. respectively and coming closer to each other.

The analysis shows that there will be no additional flood hazard caused by dam failure. Also, under the test flood condition there is no likelihood of any houses being flooded. The dam is therefore classified as 'low'hazard potential.

EVALUATION OF STRUCTURAL STABILITY
Section 6

The evaluation of the structural stability of the dam and appurtenances was based solely on the visual inspection due to the absence of engineering data. Several areas of concern that could affect the structural stability of the dam were noted.

Mortar was missing and seepage was observed between the stones at certain areas of the east dam embankment. The continued deterioration of mortar resulting from the seepage will weaken the stone masonry embankment, increasing the possibility of dam failure. At the first five foot length of dam adjacent to the 50 ft. spillway towards the east, water was leaking between the concrete coping and stone masonry which tends to accelerate deterioration of the mortar by flowing down the face of the dam embankment.

A similar leakage situation was observed between the concrete coping and stone masonry of the 50 ft. spillway. However, any seepage that may occur through the face of this structure could not be seen due to the water flowing over the spillway.

Seepage was also observed flowing from the stone masonry foundation of the warehouse located downstream and west of the spillway. The water leaking between the stones is gradually eroding the mortar which increases the possibility of failure of the foundation. Since the west side of the spillway is attached directly to this structure, failure of the building could

possibly result in dam failure. The source of the water may possibly be the intake chamber situated upstream and west of the spillway. Several pipes ranging from 1" to 12" enter the basement coming from the direction of the chamber. It is quite possible that water is leaking from the intake riser into the basement area and subsequently leaking through the foundation wall. This intake chamber should be filled in and sealed off to prevent water from entering the basement.

The 3 1/2' x 4' regulating outlet and its control mechanism which was constructed in the 1950's is presently inoperative. Indirectly, the inoperative state of the outlet decreases the dam stability since the necessary repairs to the dam cannot be accomplished without lowering the pond water level.

Addison Pond Dam is located in Seismic Zone 1 and, in accordance with Corps of Engineers' guidelines, does not warrant further seismic analysis at this time.

ASSESSMENT, RECOMMENDATIONS AND REMEDIAL MEASURES
Section 7

As assessed by the visual inspection of the site, Addison Pond Dam is judged to be in poor condition. Several areas of major concern were noted during the inspection which directly affect the dam stability.

Recommendations

It is recommended that, within one year of receipt of this report, the owner employ a qualified registered engineer to:

Inspect the dam after the pond has been lowered and investigate the source of leakage through the dam, spillway, and warehouse foundation adjacent to the west side of the spillway;

Design necessary repairs to the dam structures, including the dam, spillway and regulating outlet mechanism.

The owner should implement the recommendations of the engineer.

Remedial Measures

The following remedial measures should also be undertaken by the owner within one year of receipt of this report.

1. A formal program of operation and maintenance procedures should be instituted and fully documented to provide accurate records for future reference
2. Replace the missing stones and concrete coping on the east dam embankment and east training wall.
3. Replace the concrete coping on the west training wall.
4. Fill in and seal off the intake chamber situated upstream and west of the spillway.

APPENDIX A

INSPECTION CHECKLIST

VISUAL INSPECTION CHECK LIST
PARTY ORGANIZATION

PROJECT Addison Pond Dam

DATE 12/17/80

TIME Afternoon

WEATHER Sunny 20s

W.S. ELEV. _____ U.S. _____ DN.S.

PARTY:		DISCIPLINE:
1. Ramesh P. Singhal	(RS)	Hydraulics
2. Ed Henderson	(EH)	Geotechnical
3. Wesley J. Wolf	(WW)	Hydraulics
4. Gerald Buckley	(GB)	Soils & Structures
5.		

PROJECT FEATURE	INSPECTED BY
1. Dam Embankment	RS, EH, WW, GB
2. Spillway	RS, EH, WW, GB
3. Regulating Outlet	RS, EH, WW, GB
4.	
5.	
6.	
7.	
8.	
9.	
10.	

PERIODIC INSPECTION CHECK LIST

PROJECT Addison Pond Dam

DATE 12/17/80

PROJECT FEATURE Dam Embankment including Miscellaneous Walls

NAME RS, EH, WW, GB

DISCIPLINE

NAME

AREA ELEVATED	CONDITIONS
DAM EMBANKMENT	
Crest Elevation	99.7± (NGVD)
Current Pool Elevation	99.8± (NGVD)
Maximum Impoundment to Date	Unknown
Surface Cracks	None Observed
Pavement Conditions	N/A
Movement or settlement of crest	None Observed
Lateral movement	None Observed
Vertical alignment	Slightly Tilted
Horizontal alignment	Fair
Conditions at abutment & at Concrete Structures	Some Walls Need Repair
Indications of Movement of Structural Items on Slopes	N/A
Trespassing on Slopes	No Signs of Damage
Sloughing or Erosion of Slopes or Abutments	None Observed
Rock Slope Protection-Riprap Failures	N/A
Unusual Movement or Cracking at or Near Toes	None Observed
Unusual Embankment or Downstream Seepage	Seepage at Bottom of Wall East of Spillway. Seepage thru Building Wall West of Spillway
Piping or Boils	None Observed
Foundation Drainage Features	N/A
Toe Drains	N/A
Instrumentation System	N/A

PERIODIC INSPECTION CHECK LIST

PROJECT Addison Pond Dam DATE 12/17/80

PROJECT FEATURE Spillway NAME RS, EH, WW, GB

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS	
a. Approach Channel	No Approach Channel Pond is Directly Behind Dam
General Condition	
Loose rock overhanging channel	
Trees Overhanging Channel	
Floor of Approach Channel	
b. Weir and training walls	
General Condition of Concrete	Stone Masonry Dam. Fair Condition - Some Concrete Missing
Rust or Staining	N/A
Spalling	None Observed
Any Visible Reinforcing	N/A
Any Seepage or Efflorescence	Seepage Thru Joints & Beneath Concrete Coping
Drain Holes	N/A
c. Discharge Channel	Channel Goes Under Building
General Condition	Fair - Probably Inadequate
Loose Rock Overhanging Channel	None
Trees Overhanging Channel	Yes - Downstream of Highway Bridge.
Floor of Channel	Earth on Rock
Other Obstructions	Building & Highway Bridge

PERIODIC INSPECTION CHECK LIST

PROJECT Addison Pond Dam DATE 12/17/80

PROJECT FEATURE Regulating Outlet NAME RS, EH, WW, GB

DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITIONS
OUTLET WORKS - OUTLET STRUCTURE AND OUTLET CHANNEL	
General Condition of Concrete	Only Features Visible are:
Rust or Staining	
Spalling	① Broken Stem on Sluice gate
Erosion or Cavitation	
Visible Reinforcing	② Discharge Opening in Face of Dam (3½' x 4'). Mostly Obscured by the Flow of Water over Spillway.
Any Seepage or Efflorescence	
Dondition at Joints	
Drain Holes	
Channel	Same as Channel for Spillway
Loose Rock or Trees Overhanging Channel	
Condition of Discharge Channel	

The Regulating Outlet Discharges thru Face of Masonry Concrete Dam Below the Spillway Crest.

APPENDIX B

ENGINEERING DATA

ENGINEERING DATA CHECKLIST

ITEM	AVAILABILITY	LOCATION
LOCATION MAP	Available	Town of Glastonbury Aerial Survey Map Glastonbury, CT.
AS-BUILT DRAWINGS	Not Available	
HYDROLOGIC & HYDRAULIC DATA	Not Available	
SOIL BORINGS	Not Available	
SOIL TESTING	Not Available	
GEOLOGY REPORTS	Not Available	
CONSTRUCTION HISTORY	Not Available	
OPERATION RECORDS	Not Available	
INSPECTION HISTORY	Not Available	
DESIGN REPORT	Not Available	
DESIGN COMPUTATIONS	Not Available	
HYDROLOGIC & HYDRAULIC	Not Available	
DAM STABILITY	Not Available	
SEEPAGE ANALYSIS	Not Available	

16 12/11/90 Sunny Windy 20's π WJW
⊥ ETK

ADDISON DAM

	B.S.	H.I.	F.S.	ELEV	
B.M. 43	9.51	136.23		126.72	U.S.G.S.
TP-1	5.50	139.12	2.61	133.62	
TP-2	4.36	136.62	6.86	132.26	
TP-3	.43	118.36	18.69	117.93	
TP-4	7.04	114.08	11.32	107.04	
TP-5	3.03	106.78	10.33	103.75	
B.M.1			4.18	102.60	

BENCH RUN

17

Town of Glastonbury: Chiseled square on SE corner of concrete around C.B. 1087' NW of corner of house #168 on Addison Rd

Rock west of Addison Rd

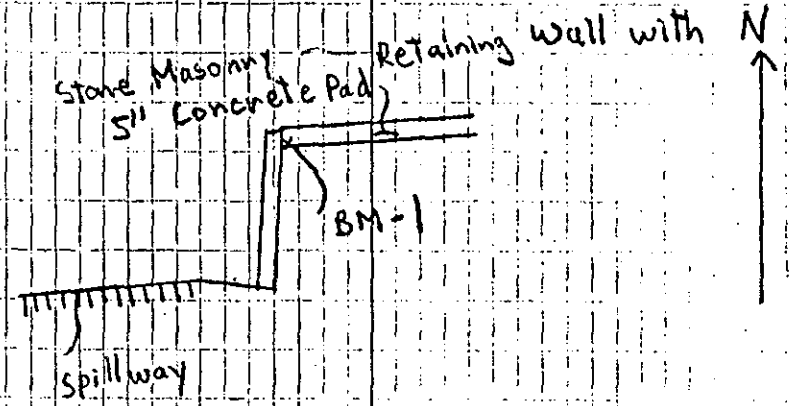
West edge of Addison Rd

Top of curb on East edge of Addison Rd

East edge of Addison Road

Base board of stockade fence

SW corner of retaining wall which is East & parallel to the spillway (marked with orange paint)



B-2

ADDISON DAM

ELEVATION INFORMATION

AROUND ADDISON DAM

	B.S.	H.I	F.S	ELEV	
B.M-1	5.19	107.79		102.60	0.566
SHOT-1			5.3	102.5	
2			4.8	103.0	
3			5.25	102.54	
4			8.0	99.8	
5			8.8	99.0	
6			7.6	100.2	
7			18.3	89.5	
8			7.56	100.24	
9			8.1	99.7	
10			8.03	99.76	
11			22.9	84.9	
12			4.5	103.3	
13			7.8	100.0	
14			7.3	100.5	
15			5.2	102.6	
16			13.1	94.7	
17			5.75	102.04	
18			8.06	99.73	

SEE PAGE 17

NE CORNER OF OLD MILL (ON BACK)

NW " " " " "

EAST END OF RETAINING WALL

EDGE OF WATER AT SHOT 3

EDGE OF WATER SHOT AT B.M.-1.

TOP RETAINING WALL AT E CORNER

NEAR SPILLWAY

GROUND BELOW SHOT 6

TOP RETAINING WALL AT EAST

END OF SPILLWAY.

CONCRETE PAD

EAST END OF SPILLWAY

BOTTOM OF SPILLWAY AT SHOT 10

TOP OF SLOPE 37' N OF SHOT 1

BOTTOM OF POND SHOT AT SHOT - 12

CORNER SHOT OF GROUND BY SHOT 6

TOP OF SLOPE 8' N OF SHOT 14

℄ OF 4" DRAIN ON SHOT 6 WALL

RETAINING WALL AT WEST

END OF SPILLWAY

W. END OF SPILLWAY

B-3

20	B.S	H.I	F.S.	F.EL
		107.79		
19			23.1	84.7
20			18.3	89.5
21			4.9	102.9
22			5.85	101.94
23			11.6	96.2
24			5.72	102.07
25			16.3	91.5
26			5.6	102.2
27			5.8	102.0
28			8.1	99.7
29			4.4	103.4
30			8.2	99.6
31			15.6	92.2
				✓
B.M. 1	B.M.			

21

BOTTOM OF SPILLWAY BELOW SHOT 18
INVERT AT 3½ K4' OUTLET
FAR CORNER SHOT (GROUND)
CONCRETE PAD WEST GRATE
(ONE CORNER AT WATER) NEAR SHOT
BOTTOM OF POND AT SHOT-22
NW CORNER OF CONCRETE PAD grate
BOTTOM OF POND AT SHOT 24
TOP OF WOOD PAD ON DIVERSION WALL
TOP AT THE W. END OF ADOBE WALL
EDGE OF WATER AT SHOT 28
TOE OF SLOPE 60' N. OF SHOT 21
EDGE OF WATER 66' " " " "
INVERT OF 8" DRAIN ON W. WALL
10' SOUTH OF CORNER OF MILL

B-4

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1. "Recommended Guildelines for Safety Inspection of Dams", Department of the Army, Office of the Chief Engineers, Washington, D.C. 20314, 1979.

2. Design of Small Dams, Revised Reprint, United States Department of the Interior, Bureau of Reclamation, United States Government Printing Office, Washington, D.C.

3. Soil Survey, Hartford County, Connecticut, United States Department of Agriculture, U.S. Government Printing Office, Washington, 25, D.C. 1962

4. Donald M. Gray: Handbook on the Principles of Hydrology, Water Information Center, 1970.

5. Hunter Rouse: Engineering Hydraulics, John Wiley and Sons, New York, 1950.

6. Victor L. Streeter: Fluid Mechanics, McGraw-Hill Book Company, Inc. 1958.

7. S.C.S. National Engineering Handbook, Hydrology Section 4, Soil Conservation Service, U.S. Department of Agriculture, 1972.

APPENDIX C

DETAIL PHOTOGRAPHS

Photo 1 - View of dam and spillway looking West.

Photo 2 - View across spillway. Note inoperative outlet works on right. Note seepage through the wall of the building.

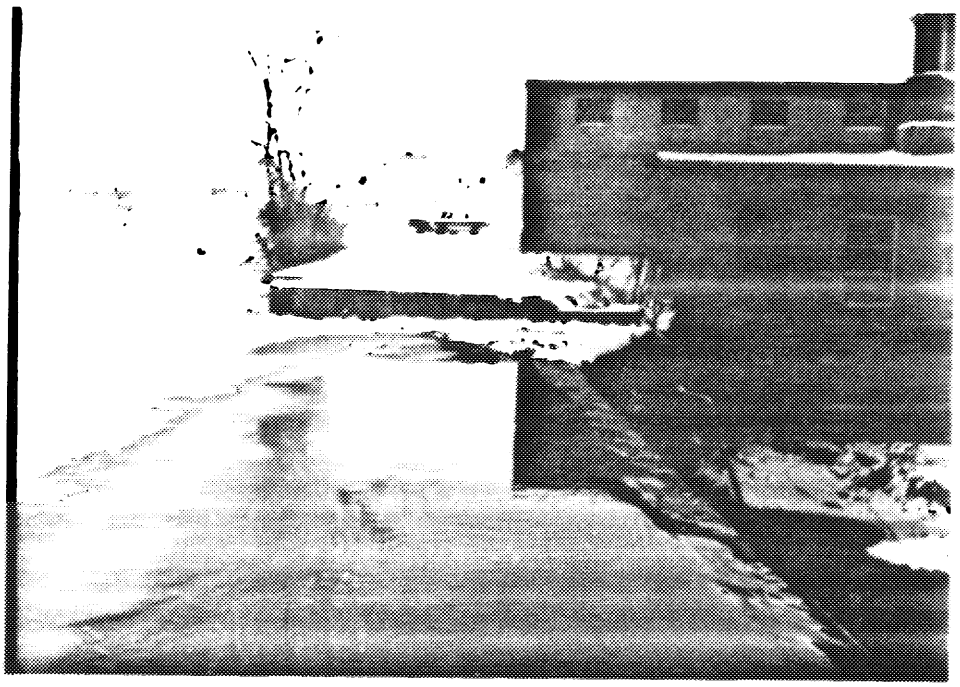

Photo 3 - View looking across spillway

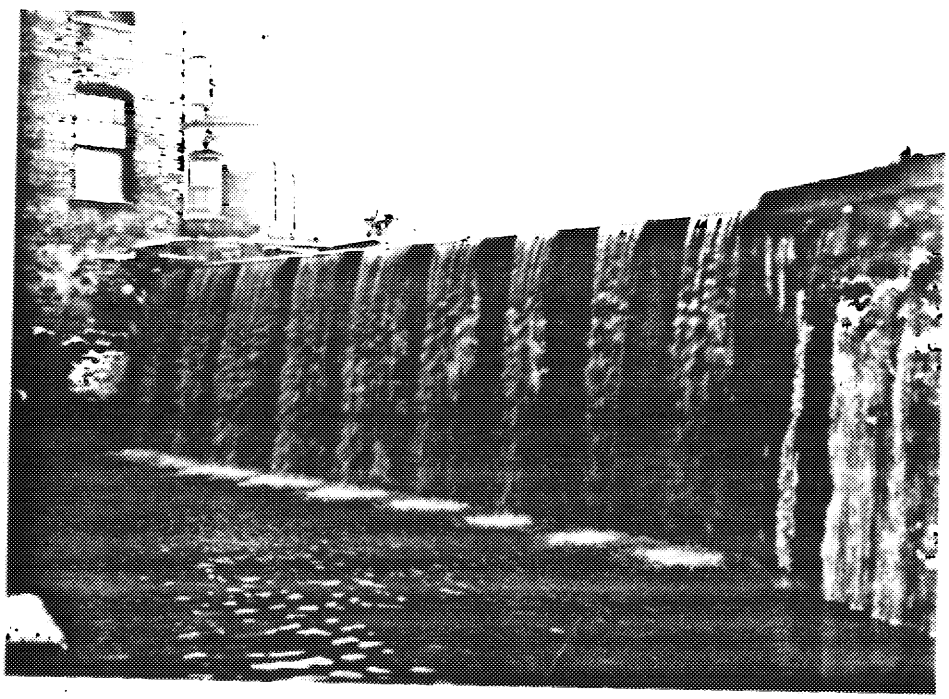

Photo 4 - View of spillway face.

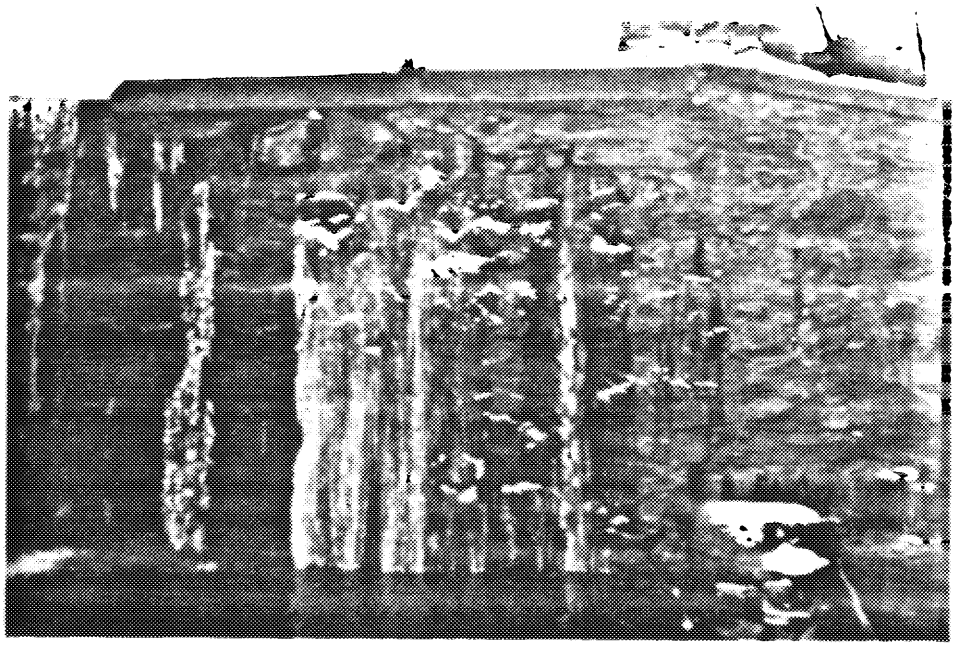

Photo 5 - Area of worst seepage through the masonry dam.

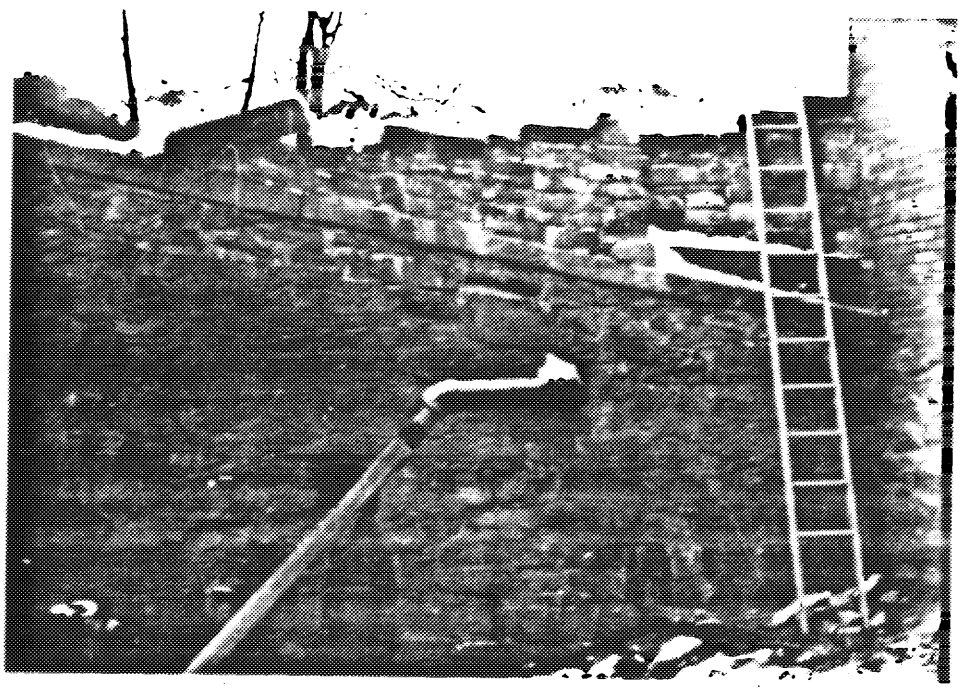

Photo 6 - Seepage zone at contact of bedrock and masonry (Left of ladder). Note lack of mortar in joints.

Photo 7 - View of pond from the dam.

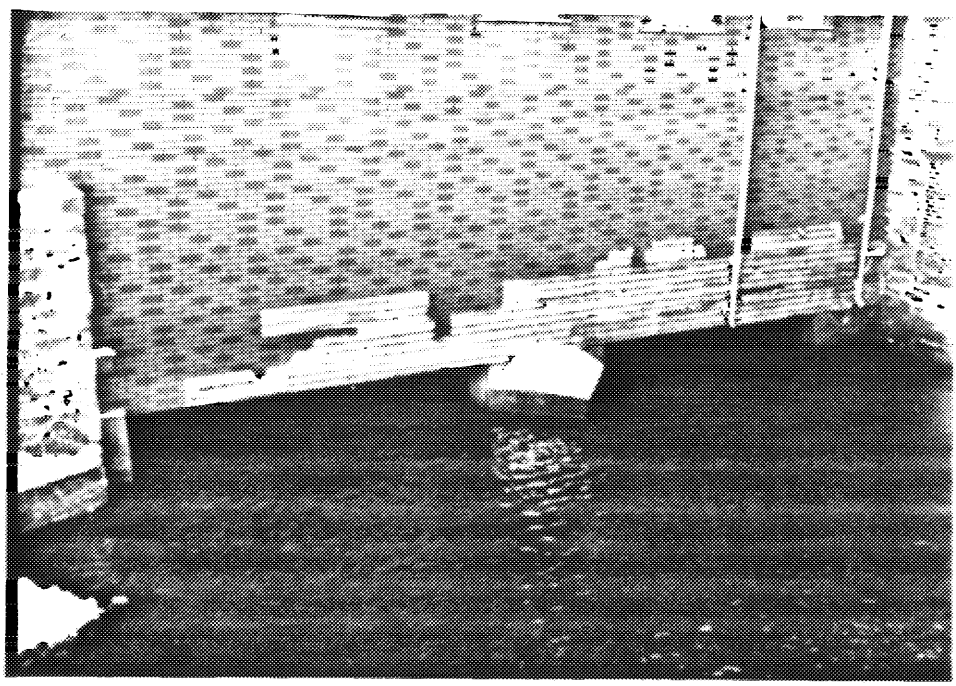

Photo 8 - Channel under warehouse downstream of spillway.

APPENDIX D

HYDROLOGIC AND HYDRAULIC COMPUTATIONS

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CONSULTING ENGINEERS
(CIVIL, HYDRAULICS, SANITARY)
827 MAPLEDALE ROAD, ORANGE, CT 06477
TEL: (203) 795-6562

Job ADDISON POND DAM
Sheet Number D-1
Date 3.29.1981
By R.S.

TEST FLOOD

DRAINAGE AREA = 6.25 SQ. MILES

THE DRAINAGE AREA IS FLAT WITH AVERAGE SLOPE APPROXIMATELY 3.25%.

FROM THE CORPS OF ENGINEERS' CHART FOR 'FLAT & COASTAL' TERRAIN,

P.M.F. = 6.25 × 775 = 4800 CFS ±

SIZE AND HAZARD CLASSIFICATION

MAXIMUM HEIGHT OF DAM = 18 FT.

MAXIMUM IMPOUNDMENT UPTO TOP OF DAM = 62 AC-FT

AS THE STORAGE LIES BETWEEN 50 AC-FT. AND 1000 AC-FT., THE SIZE OF THE DAM = "SMALL".

THE HAZARD POTENTIAL IS 'LOW'. THE DAM BREACH COMPUTATIONS INDICATE THAT THERE IS NO SUBSTANTIAL ADDITIONAL FLOODING DUE TO DAM BREACH AS COMPARED TO CONDITIONS UNDER THE TEST FLOOD FLOW.

AS PER TABLE 3, PAGES D-12, D-13 OF THE 'RECOMMENDED GUIDELINES FOR SAFETY INSPECTION OF DAMS', THE RECOMMENDED TEST FLOOD WILL BE: 50 TO 100 YEAR FREQUENCY FLOOD.

USING CONNECTICUT FLOOD FLOW FORMULA,

$Q_{MEAN} = 0.85 \times A \times S$

$= 0.85 \times 6.25 \times 172 = 900$ CFS

$Q_{100} = 5 \times 900$ CFS

$= \underline{4500}$ CFS.

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Job ADDISON POND DAM
Sheet Number D-2
Date 4.10.1981
By R.S.

SPILLWAY CAPACITIES

THE SPILLWAY CONSISTS OF THE FOLLOWING:
ONE 50 FT. WIDE OVERFLOW SECTION (CREST EL. 99.75)
ONE 13 FT. WIDE PORTION OF DAM (CREST EL. 100.25)
THE MINIMUM CREST ELEVATION OF THE DAM IS 102.0
SPILLWAY CAPACITIES AT VARIOUS ELEVATIONS ARE TABULATED BELOW:

ELEVATION:	CAPACITY OF 50' LONG MAIN SPILLWAY ($Q = 3 \times 50 \times H^{3/2}$) CREST EL. 99.75	CAPACITY OF 13' LONG SECONDARY SPILLWAY ($Q = 3 \times 13 \times H^{3/2}$) CREST EL 100.25	TOT CF
99.75	0.0	0.0	0.0
100.00	20.0	0.0	20.0
101.00	210.0	25.0	235
102.00 (TOP OF DAM)	510.0	90.0	600.0

AFTER OVERTOPPING OCCURS THE OVERFLOWS CONSISTING THOS OVER THE TWO SPILLWAY SECTIONS AND THE LOW EARTH PORTIONS OF THE DAM (TOTAL OVERFLOW WIDTH = 200 FT.) WIL BE AS FOLLOWS:

ELEVATION	MAIN SPILLWAY $Q = 3 \times 50 \times H^{3/2}$ CREST EL. 99.75	SECONDARY SPILLWAY $Q = 3 \times 13 \times H^{3/2}$ CREST EL. 100.25	EARTHEN DAM SECTIONS ON EAST & WEST $Q = 3 \times 135 \times H^{3/2}$ CREST EL. 102.5	TOTAL CFS.
102.5	685.0	130.0	0.0	815.0
103.0	880.0	180.0	140.0	1200.0
104.0	1315.0	285.0	745.0	2345.0
105.0	1805.0	405.0	1600.0	3810.0
106.0	2345.0	535.0	2650.0	5530.0

UNDER THE TEST FLOOD CONDITION ($Q = 4500$ CFS.) THE DAM WILL BE OVERTOPPED BY APPROXIMATELY 3.5 ft. THE MAXIMUM SPILLWAY CAPACITY OF 600 CFS UPTO THE TOP OF THE DAM IS ONLY 13 % OF THE TEST FLOOD.

NOTE: DUE TO THE SMALL STORAGE CAPACITY IN THE POND THE EFFECT OF ROUTING IS INSIGNIFICANT AND HAS NOT BEEN TAKEN INTO CONSIDERATION.

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Job ADDISON POND DAM
Sheet Number D-3
Date 3-29-1981
By R.S.

DAM FAILURE FLOOD ROUTING

AS PER CORPS OF ENGINEERS' GUIDELINES,

$$Q_{P_1} = \frac{8}{27} \cdot W_b \cdot \sqrt{2g} \cdot y_o^{3/2}$$

WHERE Q_{P_1} = DAM BREACH PEAK FAILURE OUTFLOW IN C.F.S.

W_b = BREACH WIDTH = 40% OF DAM LENGTH AT MID-HEIGHT.

Y_o = HEIGHT FROM STREAM-BED TO POOL LEVEL AT FAILURE

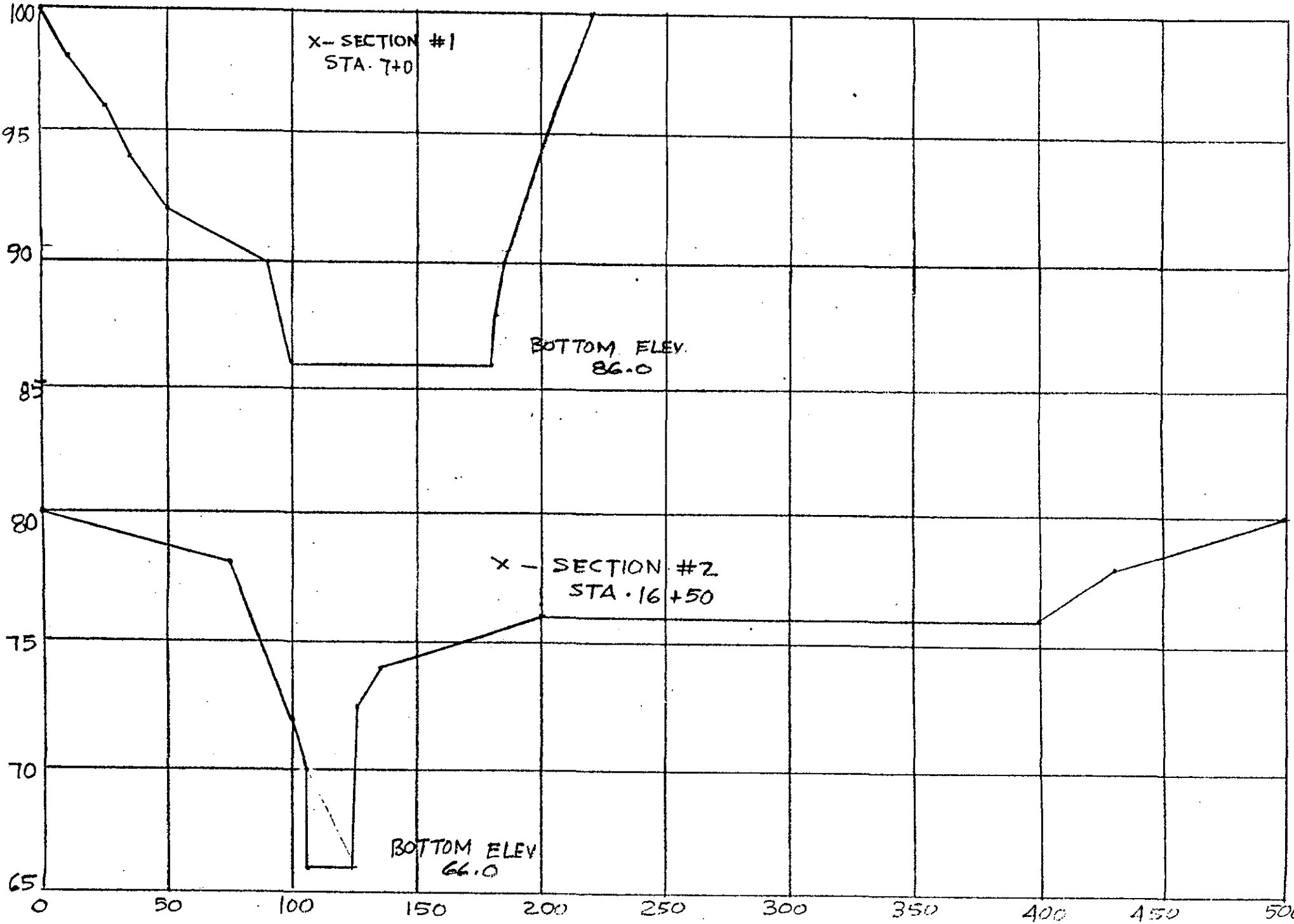
SUBSTITUTING KNOWN VALUES OF W_b AND Y_o $(0.4 \times 200 = 80')$ AND 18' RESPECTIVELY:

$$Q_{P_1} = \frac{8}{27} \times (0.4 \times 200) \times \sqrt{32.2} \times 18^{3/2}$$

$$= 10{,}000 \text{ C.F.S}$$

3.29.1981

ADDISON POND DAM



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Job ADDISON POND DAM
Sheet Number D-5
Date 3-29-1981
By R.S.

DAM FAILURE (D/S FLOOD ROUTING)

X-SECTION #1 - STA 7+0

ELEV	D (FT)	P_w (FT)	A (S.F.)	$R = A/P_w$ (FT)	S (FT/FT)	$V = \frac{1.486}{n} R^{2/3} S^{1/2}$ (FT./SEC.)	Q CFS
88.0	2.0	85	245	2.9	↑	4.10	1000
90.0	4.0	100	430	4.3	.0023	5.29	2275
95.0	9.0	180	1130	6.3	↓	6.82	7700
100.0	14.0	225	2140	9.5	↓	8.97	19200

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Job ADDISON POND DAM
Sheet Number D-6
Date 3.29.1981
By R.S.

DAM FAILURE (D/S FLOOD ROUTING)

X-SECTION #2 - STA. 16+50

ELEV.	D (FT)	P_w (FT)	A (S.F.)	$R = A/P_w$ (FT.)	S (FT/FT)	$V = \frac{1.486}{n} R^{2/3} S^{1/2}$ (FT./SEC.)	Q CFS.
70.0	4.0	20	80	4.00	↑	8.06	640
75.0	9.0	80	255	3.19	0.0057	6.93	1770
78.0	12.0	360	1030	2.86	↓	6.45	6640
80.0	14.0	500	1890	3.78		7.77	14,700

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Job ADDISON POND DAM
Sheet Number D-7
Date 3.29.1981
By R.S.

DAM FAILURE FLOOD ROUTING
X-SECTION #1 STA. 7+0

FOR Q_{P_1} = 10,000 CFS.
H_1 = 10.1' AND A_1 = 1356 S.F.
REACH LENGTH = 700 FT.
STORAGE = 700 × 1356/43560 = 22 AC.FT

$$Q_{P_2} = Q_{P_1}\left(1 - \frac{22}{62}\right) = 10{,}000 \times 0.67 = 6{,}700 \text{ CFS.}$$

H_2 = 8.1' AND A_2 = 1000 S.F.
STORAGE = 1,000 × 700/43560 = 16.0 AC. FT.
AVG. STORAGE = ½ (16 + 22) = 19 AC. FT.

$$Q_{P_3} = Q_{P_1}\left(1 - \frac{19}{62}\right) = 10{,}000 \times 0.72 = 7{,}200 \text{ CFS}$$

H_3 = 8.6' AND A_3 = 1070 S.F.
STORAGE = 1070 × 700/43560 = 17.0 AC.FT.
AVG. STORAGE = ½ (17 + 19) = 18 AC.FT.

$$Q_{P_4} = Q_{P_1}\left(1 - \frac{18}{62}\right) = 10{,}000 \times 0.73 = 7{,}300 \text{ CFS}$$

THE ROUTED FLOOD FLOW BELOW X-SECTION #1 WILL BE APPROXIMATELY 7,300 CFS.
H = 8.7'
POST-FAILURE FLOOD ELEVATION
= 86.0 + 8.7 = 94.7
SAY 95.0

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Job ADDISON POND DAM
Sheet Number D-8
Date 3.29.1981
By R.S.

DAM FAILURE FLOOD ROUTING
X-SECTION #2 STA. 16+50

FOR $Q_{P1} = 7,300$
$H_1 = 12.2'$ AND $A_1 = 1,100$ SF.
REACH LENGTH = 950 FT.
STORAGE = $950 \times 1100/43560 = 24$ AC. FT.

$Q_{P2} = Q_{P1}(1 - \frac{24}{62}) = 7,300 \times 0.61 = 4,450$ CFS.

$H_2 = 10.65$ AND $A_1 = 680$ SF.
STORAGE = $950 \times 680/43560 = 15$ AC. FT
AVG. STORAGE = $\frac{1}{2}(15 + 24) = 19.5$ AC. FT.

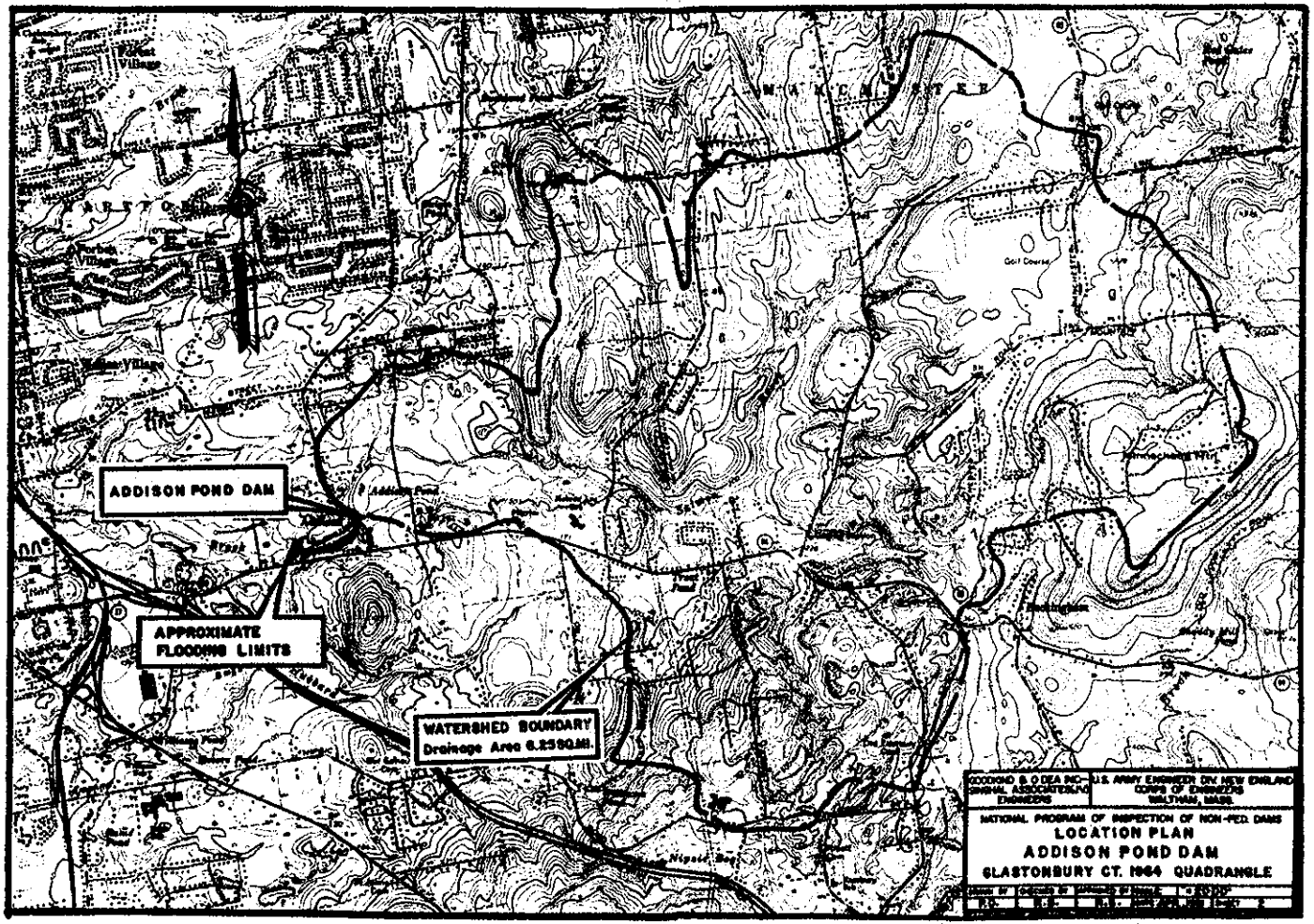
$Q_{P3} = Q_{P1}(1 - \frac{19.5}{62}) = 7,300 \times 0.69 = 5,040$ CFS

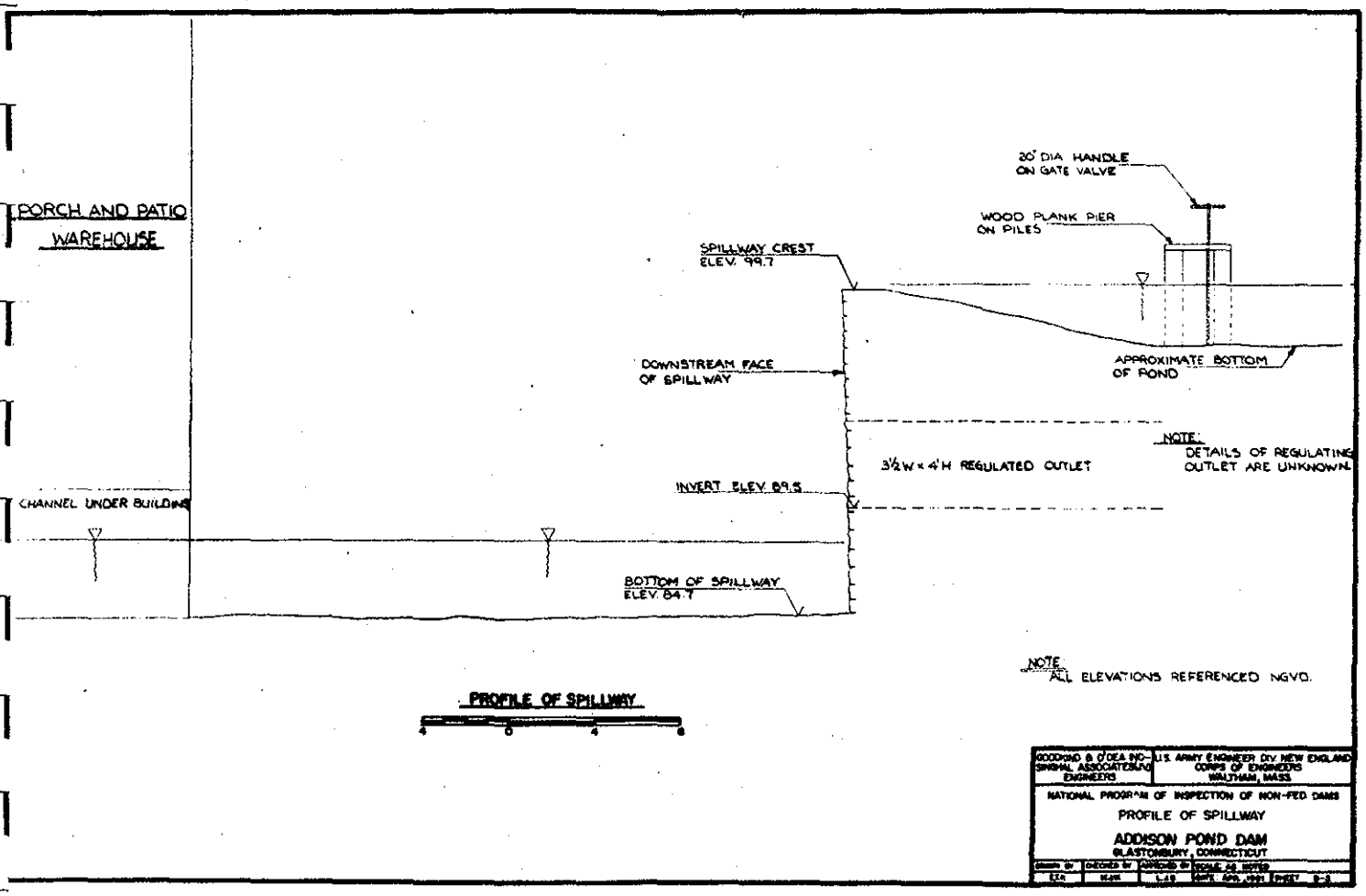
$H_3 = 11.0$ AND $A_3 = 774$ SF
STORAGE = $950 \times 774/43560 = 17$ AC. FT.
AVG. STORAGE = $\frac{1}{2}(17 + 19.5) = 18$ AC-FT.

$Q_{P4} = Q_{P1}(1 - \frac{18}{62}) = 7,300 \times 0.71 = 5,200$ CFS

AND $H_4 = 11.1$

THE ROUTED FLOW BELOW X-SECTION #2 WILL BE 5,200 CFS. APPROXIMATELY.
AND POST-FAILURE FLOOD ELEVATION
$= 66.0 + 11.1 = 77.1$
SAY 77.0


ADDISON POND DAM
APPROXIMATE FLOODING LIMITS
WATERSHED BOUNDARY
Drainage Area 6.25SQ.MI.
WOODARD & CURRAN INC.
GENERAL ASSOCIATES & ENGINEERS
U.S. ARMY ENGINEER DIV NEW ENGLAND
CORPS OF ENGINEERS
WALTHAM, MASS.
NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS
LOCATION PLAN
ADDISON POND DAM
GLASTONBURY CT. 1964 QUADRANGLE


PORCH AND PATIO
WAREHOUSE
CHANNEL UNDER BUILDING
20" DIA HANDLE ON GATE VALVE
WOOD PLANK PIER ON PILES
SPILLWAY CREST ELEV. 99.7
DOWNSTREAM FACE OF SPILLWAY
APPROXIMATE BOTTOM OF POND
NOTE
DETAILS OF REGULATING OUTLET ARE UNKNOWN.
3½W x 4'H REGULATED OUTLET
INVERT ELEV. 89.5
BOTTOM OF SPILLWAY ELEV. 84.7
NOTE
ALL ELEVATIONS REFERENCED NGVD.
PROFILE OF SPILLWAY
0
4
8
WOODARD & D'OEA INC.
STRUCTURAL ASSOCIATES AND ENGINEERS
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CORPS OF ENGINEERS
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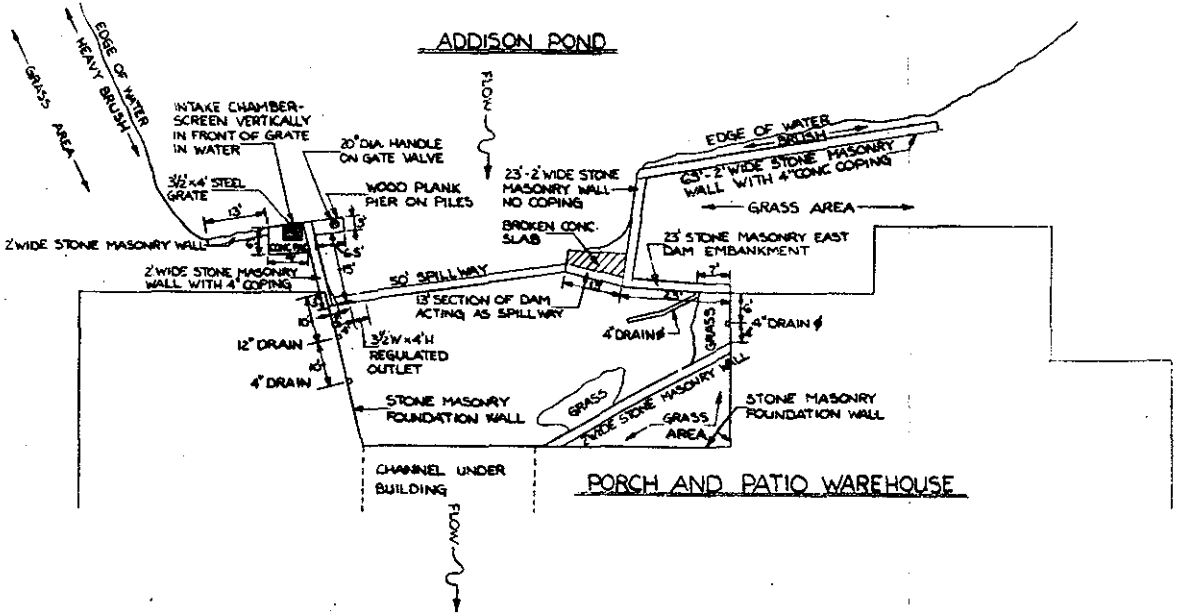
NATIONAL PROGRAM OF INSPECTION OF NON-FED DAMS
PROFILE OF SPILLWAY
ADDISON POND DAM
GLASTONBURY, CONNECTICUT
DRAWN BY
CHECKED BY
APPROVED BY
SCALE AS NOTED
DATE APR. 1981
SHEET 8-8



GENERAL PLAN

20 0 20 40

GOODKIND & O'DEA INC.-SINGHAL ASSOCIATES JV ENGINEERS

U.S. ARMY ENGINEER DIV NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.

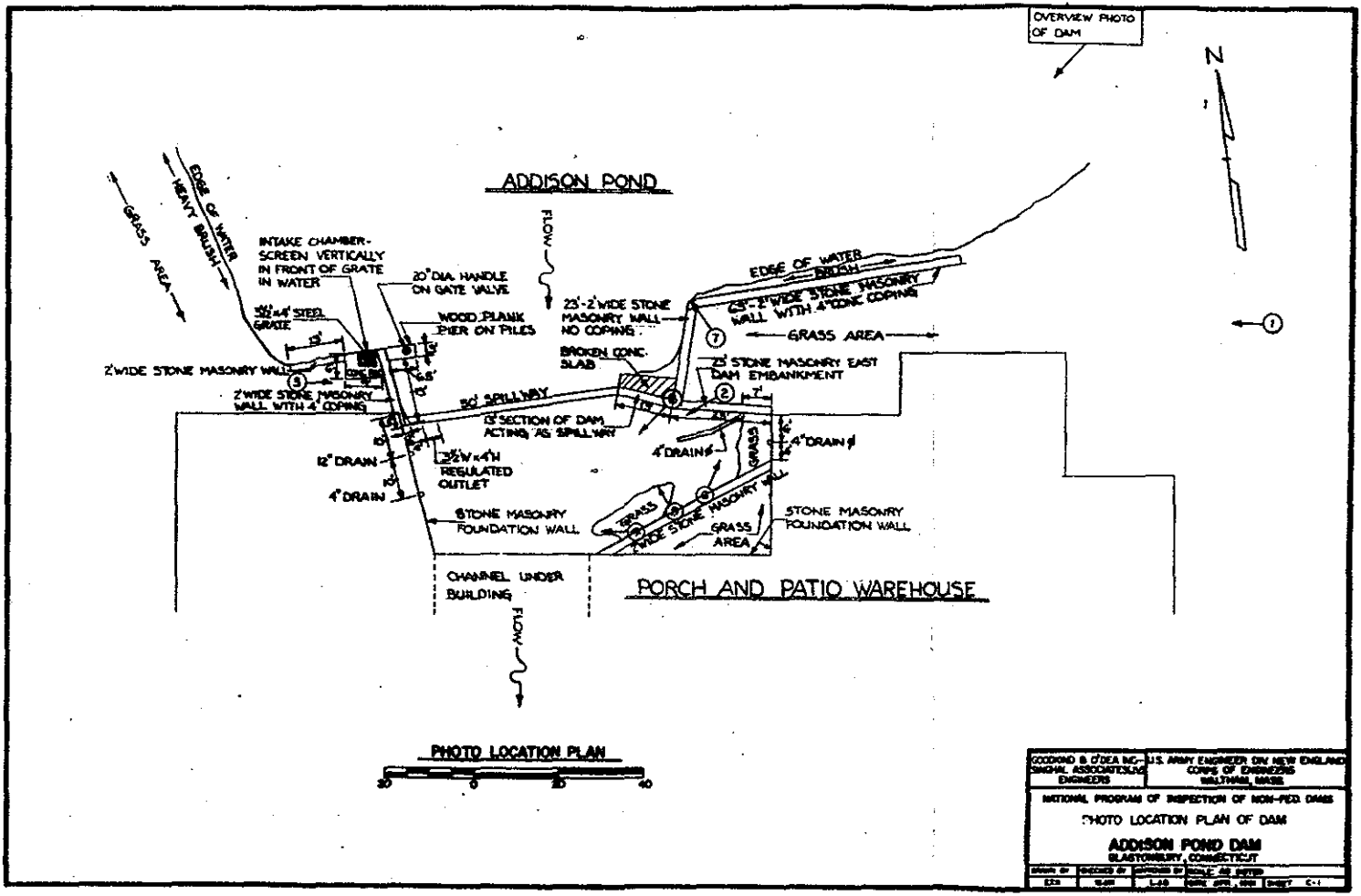
NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS

GENERAL PLAN

ADDISON POND DAM

GLASTONBURY, CONNECTICUT

DRAWN BY	CHECKED BY	APPROVED BY	SCALE AS NOTED
EFB	RJAM	L.J.S.	DATE APR. 1978 SHEET 2-7


OVERVIEW PHOTO OF DAM
N
ADDISON POND
FLOW
EDGE OF WATER
HEAVY BRUSH
GRASS AREA
INTAKE CHAMBER-SCREEN VERTICALLY IN FRONT OF GRATE IN WATER
20" DIA. HANDLE ON GATE VALVE
3½'x4' STEEL GRATE
WOOD PLANK PIER ON PILES
2'WIDE STONE MASONRY WALL
2'WIDE STONE MASONRY WALL WITH 4" COPING
23'-2'WIDE STONE MASONRY WALL NO COPING
23'-2'WIDE STONE MASONRY WALL WITH 4"CONC. COPING
EDGE OF WATER
BRUSH
GRASS AREA
BROKEN CONC. SLAB
23' STONE MASONRY EAST DAM EMBANKMENT
30' SPILLWAY
13' SECTION OF DAM ACTING AS SPILLWAY
12" DRAIN
3½'W x 4'H REGULATED OUTLET
4" DRAIN
4" DRAIN
4" DRAIN
8" STONE MASONRY FOUNDATION WALL
GRASS
2'WIDE STONE MASONRY WALL
GRASS AREA
STONE MASONRY FOUNDATION WALL
CHANNEL UNDER BUILDING
PORCH AND PATIO WAREHOUSE
FLOW
PHOTO LOCATION PLAN
30 0 20 40
GOODKIND & O'DEA INC.-SINGHAL ASSOCIATES, INC. ENGINEERS
U.S. ARMY ENGINEER DIV NEW ENGLAND CORPS OF ENGINEERS WALTHAM, MASS.
NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS
PHOTO LOCATION PLAN OF DAM
ADDISON POND DAM
GLASTONBURY, CONNECTICUT
DRAWN BY EDS
CHECKED BY GJD
APPROVED BY LJG
SCALE AS NOTED
DATE APR., 1978
SHEET C-1

SINGHAL ASSOCIATES
CONSULTING ENGINEERS
(CIVIL, HYDRAULICS, SANITARY)

827 MAPLEDALE ROAD, ORANGE, CT 06477
TEL: (203) 795-6562

Job ADDISON POND
Sheet Number D-9
Date 4.1.1981
By RS

D/S FLOOD ELEVATIONS FOR TEST-FLOOD FLOW

TEST FLOOD = 4,500 CFS

AT. X-SEC #1, H = 6.3′ A = 760, STORAGE = 12 AC

ROUTED FLOW = $4800\left(1-\frac{13}{62}\right) = 4800 \times 0.8 = 3800$ CF

FLOOD ELEVATION = 86.0 + 6.3 = 92.3
SAY 92.0

AT X-SEC #2

$Q_{P_1} = 3800$, $H_1 = 10.2'$ $A_1 = 580$

STORAGE = $580 \times 950/43560 = 13$ AC.FT.

$Q_{P_2} = 3800 \times \left(1-\frac{13}{62}\right) = 3000$ CFS

$H_2 = 9.8'$ & $A_2 = 450$ SF.

STORAGE = $450 \times 950/43560 = 10$ AC.FT

AVG. STORAGE = $\frac{1}{2}(10+13) = 11.5$ AC.FT

$Q_{P_3} = 3800 \times \left(1-\frac{11.5}{62}\right) = 3100$

$H_3 = 9.8'$

TEST-FLOOD ELEVATION

= 66.0 + 9.8 = 75.8 SAY 76.0